ASSIGNMENT 12

Textbook Assignment: "Landing Gear, Brakes, and Hydraulic Utility Systems," chapter 12, pages 12-1 through 12-79.

12-1. What is the most common type of landing gear used on naval aircraft?

1. Bicycle
2. Tricycle
3. Inverted
4. Indented

12-2. When the landing gear is fully retracted in a typical aircraft landing gear system, the up lock mechanism is actuated by what means?

1. Electrically
2. Mechanically
3. Hydraulically
4. Pneumatically

IN ANSWERING QUESTION 12-3, REFER TO FIGURE 12-4 IN THE TEXTBOOK.

12-3. After the locks are disengaged in the emergency landing gear extension system, what force(s) extend(s) the main gear?

1. Gravity only
2. Nitrogen only
3. Hydraulic pressure only
4. Gravity, nitrogen, and hydraulic pressure

12-4. An up lock switch is installed on each main landing gear door latch to provide (a) what indication and (b) in what location?

1. (a) Main-gear-down
   (b) wheel well
2. (a) Main-gear-up
   (b) wheel well
3. (a) Main-gear-down
   (b) cockpit
4. (a) Main-gear-up
   (b) cockpit

12-5. The distance that the landing gear doors will open or close depends upon which of the following factors?

1. The volume of hydraulic fluid used
2. The amount of pneumatic pressure exerted
3. The length of the door linkage and the adjustment of the doorstops
4. The amount of material trimmed from the doors and the length of throw of the latch cylinder

IN ANSWERING QUESTION 12-6, REFER TO FIGURE 12-8 IN THE TEXTBOOK.

12-6. The rate of fluid flow from the lower chamber to the upper chamber of the landing gear shock strut is controlled by what component?

1. The air valve
2. The torque arm
3. The metering pin
4. The orifice plate

IN ANSWERING QUESTION 12-7, REFER TO FIGURE 12-10 IN THE TEXTBOOK.

12-7. When the nose gear shock strut is fully extended, the wheel and axle assembly is aligned in the straight ahead position by which of the following components?

1. The cylinder
2. The torque arm
3. The centering cams
4. The fork and axle assembly

12-8. The landing gear drag brace is hinged at the center for which of the following reasons?

1. To facilitate maintenance
2. To facilitate proper inspections
3. To permit the brace to jackknife during gear extension
4. To permit the brace to jackknife during gear retraction

12-9. Hydraulically actuated nosewheel steering systems are controlled by which of the following methods?

1. Manually
2. Electrically only
3. Mechanically only
4. Electrically or mechanically

12-10. In a nosewheel steering system, what component generates an electrical signal proportional to the amount of rudder pedal deflection?

1. The feedback potentiometer
2. The command potentiometer
3. The steering transducer
4. The steering amplifier

12-11. You are performing an operational check on the nosewheel steering system with the nose gear turned to 30° right of center. What action, if any, will occur when you extend the arresting gear?

1. It will return to the center position
2. It will move 1 inch right of center
3. It will move 1 inch left of center
4. None

12-12. When adjusting the nosewheel steering amplifier, which of the following procedures should you perform?

1. Operate the steering switch
2. Insert rigging pin No. 1 into the rudder pedal linkage
3. Check to see that the gear centers within 2° of center index mark
4. Each of the above

12-13. When the steering dampener assembly of a mechanically controlled nose steering system is sent to the intermediate level of maintenance, which of the following bench tests are performed with the unit in neutral while the return leakage is being measured?

1. The no steer test
2. The output torque test
3. The stall leakage test
4. The steering resolution test

12-14. During an aircraft landing gear drop check, what is the maximum (a) pressure and (b) gallons per minute of hydraulic fluid required to retract and lock the gear?

1. (a) 1800 psi (b) 4 gpm
2. (a) 2000 psi (b) 2 gpm
3. (a) 2400 psi (b) 3 gpm
4. (a) 3000 psi (b) 4 gpm

12-15. When you are performing an emergency extension of the landing gear during a drop check, the force required to push the main landing gear to the locked position at the axle hub should NOT exceed what maximum amount?

1. 50 lb
2. 20 lb
3. 30 lb
4. 40 lb

12-16. A significant number of unsafe or hung landing gear discrepancies are caused by which of the following maintenance related problems?

1. Improper rigging only
2. Improper adjustment of linkages only
3. Improper rigging or improper adjustment of linkages only
4. Improper rigging, improper adjustment of linkages, or factory defective parts

12-17. You can release the nitrogen pressure from a shock strut by which of the following means?

1. Removing the valve core
2. Depressing the valve core
3. Turning the valve swivel nut clockwise
4. Turning the valve swivel nut counterclockwise

12-18. When removing a shock strut from an aircraft, you should remove the wheel and brake assembly to reduce the weight and allow for easier handling.

1. True
2. False

12-19. To ensure complete compression when deflating a typical shock strut, you may need to perform which of the following functions?

1. Rock the aircraft
2. Hoist the aircraft
3. Lower the arresting gear
4. Bleed the landing gear accumulator

12-20. When reinstalling an air valve assembly with a new O-ring into a shock strut, you should tighten the air valve body hex nut to what specified torque?

1. 30 to 40 in.-lb
2. 40 to 65 in.-lb
3. 100 to 110 in.-lb
4. 120 to 135 in.-lb

12-21. You can usually stop excessive fluid leakage from a shock strut by deflating the strut and performing which of the following functions?

1. Inflating the strut to 1 1/2 times its normal pressure for 48 hours
2. Tightening the packing gland nut
3. Replacing all of the packings
4. Overhauling the strut

12-22. When a strut assembly is sent to an intermediate level maintenance facility, what is the first step taken in the disassembly process?

1. The inner cylinder is withdrawn from the outer cylinder
2. All pressure is exhausted from the strut
3. The air valve assembly is removed
4. The hydraulic fluid is drained

12-23. When inspecting a strut assembly at an intermediate maintenance activity, what tool should you use to check the bearings for residual magnetism?

1. A dial indicator
2. A mattock
3. A compass
4. A magnet

12-24. When the specific torque values for strut assembly threaded parts are NOT specified in the 03 manual or MIM, what publication should you consult?

1. NAVAIR 01-1A-509
2. NAVAIR 01-1A-16
3. NAVAIR 01-1A-12
4. NAVAIR 01-1A-8

12-25. You are bench testing a strut assembly that has been serviced with fluid and nitrogen. To ensure that the strut shows no leakage, you should allow the strut to remain pressurized for what minimum number of minutes?

1. 15 min
2. 30 min
3. 45 min
4. 60 min

12-26. What type of brake system has its own reservoir and is completely separate from the aircraft's main hydraulic system?

1. The detached system
2. The power boost system
3. The independent-type system
4. The power brake control valve system

12-27. Fluid is routed to a Goodyear master cylinder by (a) what method and from (b) what source?

1. (a) Gravity
   (b) external reservoir
2. (a) Gravity
   (b) internal reservoir
3. (a) Hydraulic pump
   (b) external reservoir
4. (a) Hydraulic pump
   (b) internal reservoir

12-28. An independent-type brake system employing a Goodyear master cylinder must be bled by what method?

1. Top Up
2. Top down
3. Bottom up
4. Bottom down

12-29. In a power boost brake system, main hydraulic system pressure is used for what purpose?

1. To assist in pedal movement only
2. To operate the emergency system only
3. To assist in pedal movement and operate the emergency system only
4. To assist in pedal movement, operate the emergency system, and actuate the brake cylinders

12-30. Which of the following types of aircraft would normally use a power brake control valve system?

1. A-4
2. T-2
3. F-18
4. C-130

12-31. The brake pedal linkage of a power brake control valve (pressure ball check type) system is connected to the control valve by what component?

1. A link
2. A shackle
3. A tuning fork
4. A piston shaft

IN ANSWERING QUESTION 12-32, REFER TO FIGURE 12-28 IN THE TEXTBOOK.

12-32. In a power brake control valve (sliding spool type) system, what component(s) provide(s) feel to the brake pedal?

1. The large spring only
2. The small spring only
3. The small spring and the spool return spring only
4. The small spring, the spool return spring, and the large spring

12-33. What is the purpose of a brake debooster cylinder?

1. To increase the pressure and decrease the volume of fluid flow to the brake
2. To decrease the pressure and increase the volume of fluid flow to the brake
3. To decrease both the pressure and the volume of fluid flow to the brake
4. To increase both the pressure and the volume of fluid flow to the brake

12-34. What type of brake assembly is normally used on a medium-sized aircraft?

1. Dual disc
2. Single disc
3. Segmented rotor
4. Multiple/trimetallic disc

12-35. The brake linings of a single disc brake assembly are known by what term?

1. Discs
2. Pucks
3. Rotors
4. Plates

12-36. A dual disc brake assembly has what total number of brake linings (pucks)?

1. 10
2. 12
3. 16
4. 20

12-37. To give correct clearances between the rotating and stationary discs in a multiple/trimetallic brake system, what device traps a predetermined amount of fluid in the brake?

1. The stator
2. The backup ring
3. The annular piston
4. The automatic adjuster

12-38. In an independent brake system, the reservoir fluid level is checked by what means?

1. A dip stick
2. A sight gauge
3. A cockpit indicator
4. A lower ring in the filler neck

12-39. To perform an operational check on the emergency brake system, what source of external power, if any, is required?

1. Pneumatic
2. Hydraulic
3. Electrical
4. None

12-40. You are checking the brake lining wear of a disassembled brake assembly. What is the minimum allowable thickness of any one lining (puck) before the entire set must be replaced?

1. 1/64 in.
2. 1/32 in.
3. 1/16 in.
4. 1/8 in.

12-41. What factor(s) generally determine(s) the method you should use for bleeding brake systems?

1. The amount of air in the system
2. The type and design of the brake system to be bled
3. The means by which the brake is mounted on the strut
4. The type of main hydraulic system used in the aircraft

12-42. An overheated wheel brake assembly should be allowed to cool in the ambient air for what prescribed amount of time?

1. 45 to 60 min
2. 35 to 45 min
3. 30 to 40 min
4. 15 to 25 min

12-43. The independent brake system reservoir leakage test is performed by connecting a source of air to the filler port at what prescribed pressure?

1. 25 psi
2. 30 psi
3. 35 psi
4. 50 psi

12-44. To perform an operational test on a power brake valve, you must have a test stand capable of supplying what minimum amount of hydraulic pressure?

1. 1500 psi
2. 2000 psi
3. 3000 psi
4. 4500 psi

12-45. When you are performing an operational test on a power/manual brake valve, the hydraulic fluid must be within what prescribed temperature range?

1. 40° to 90°F
2. 55° to 100°F
3. 70° to 110°F
4. 85° to 130°F

12-46. Before disassembling a master brake cylinder, what device should you install on the end of the piston rod to prevent personal injury?

1. A nut
2. A clamp
3. A rig pin
4. A spring compressor

12-47. During the reassembly of a master brake cylinder, what type of lubricant should you apply to the suspension rod end bearing?

1. Oil
2. Wax
3. Grease
4. Hydraulic fluid

12-48. Excessive heating of a shuttle valve is an indication of what problem?

1. External leakage
2. Internal leakage
3. Defective emergency accumulator
4. Excessive cycling of the emergency pump

12-49. When performing a thermal crack test on an automatic brake adjuster valve, you should crack the valve at what prescribed pressure range?

1. 12 to 17 psi
2. 20 to 29 psi
3. 30 to 37 psi
4. 41 to 45 psi

12-50. After disassembling a brake selector valve you should clean the parts in which of the following substances?

1. Freon
2. Hydraulic fluid
3. Aliphatic naphtha
4. Dry-cleaning solvent

12-51. During a bench test, what is the maximum allowable torque required to rotate the swivel?

1. 30 in.-lb
2. 40 in.-lb
3. 50 in.-lb
4. 60 in.-lb

IN ANSWERING QUESTION 12-52, REFER TO FIGURE 12-47 IN THE TEXTBOOK.

12-52. When the brakes are released, what component prevents the piston from returning to its original position?

1. The spring guide
2. The adjusting pin
3. The return spring
4. The retaining ring

12-53. The tapered grip method is used to restrict the movement of the captured torquing-type automatic adjuster?

1. True
2. False

IN ANSWERING QUESTION 12-54, REFER TO FIGURE 12-51 IN THE TEXTBOOK.

12-54. The disc guide lining is attached to the disc guide by which of the following items?

1. Nuts
2. Pins
3. Bolts
4. Rivets

12-55. When pressure testing a dual disc brake assembly for leaks, you should hold the test pressure for what total number of minutes?

1. 5 min
2. 2 min
3. 3 min
4. 4 min

12-56. During brake application in a trimetallic disc brake assembly, the braking force is directly transmitted to which of the following components?

1. The brake pistons
2. The rotating disc
3. The self-adjusting mechanism
4. The pressure plate subassembly

12-57. The rotating disc of a trimetallic disc brake must be replaced if it is worn below what prescribed thickness?

1. 0.1 in.
2. 0.2 in.
3. 0.3 in.
4. 0.4 in.

12-58. You are testing a trimetallic disc brake and have 90 psi applied to the brake assembly. What is the minimum clearance you must have between the pressure plate and the first rotating disc?

1. 0.045 in.
2. 0.055 in.
3. 0.065 in.
4. 0.075 in,

12-59. What integral type of arresting hook has a Metco-coated hook point?

1. Type I
2. Type II
3. Type III
4. Type IV

12-60. An arresting gear detachable hook point should be removed and inspected after what total number of arrestments?

1. 10
2. 12
3. 15
4. 25

12-61. What is the maximum operating pressure within a liquid centering spring assembly when it is bottomed out?

1. 1,000 psi
2. 10,000 psi
3. 20,000 psi
4. 50,000 psi

12-62. The arresting hook assembly must be lowered to adjust the liquid centering spring.

1. True
2. False

12-63. In a catapult system, the launch bar moves down and encloses the two horns on the nose gear axle beam enabling what action to take place?

1. The launch bar to remain straight
2. The launch bar to steer the nose gear
3. The launch bar to be attached to the tension bar
4. The launch bar to be locked in the extend position

12-64. If automatic retraction fails, what components will raise the launch bar to the retracted position?

1. The leaf springs
2. The coil springs
3. The locking fingers
4. The nose axle beam horns

12-65. You are performing an operational test of the air refueling probe system. What is the prescribed time range for the complete (a) extension cycle and (b) retraction cycle?

1. (a) 1 to 3 sec
   (b) 4 to 7 sec
2. (a) 2 to 5 sec
   (b) 5 to 9 sec
3. (a) 3 to 5 sec
   (b) 6 to 8 sec
4. (a) 5 to 7 sec
   (b) 9 to 11 sec

12-66. In a wing fold system, what device prevents the wing fold handle from moving past the first stop when you are folding the wings?

1. A hydraulic lock at the wing lock cylinder
2. A hydraulic lock at the wing fold cylinder
3. A spring-loaded mechanical latch at the wing lock cylinder
4. A spring-loaded mechanical latch at the wing fold cylinder

12-67. In a wing fold system, the spring-loaded check ball of the thermal relief valve reseats at what prescribed pressure?

1. 4,150 psi
2. 3,970 psi
3. 3,590 psi
4. 3,360 psi

12-68. If the wing lock warning flags in a wing fold system fail to retract, you should consider this an indication of what problem?

1. The lockpins are failing to properly enter the lock fittings
2. The wing lock timer valve is not functioning
3. The hydraulic system pressure is insufficient
4. The wing fold cylinder is defective

12-69. In an ac generator drive system (hydraulically operated), when the return fluid exits the motor, it is routed through a heat exchanger and is cooled by what means?

1. By fuel
2. By ram air
3. By a compressor
4. By an electrically driven blower unit

12-70. To prevent overtemperature and/or reverse airflow in the engine compartment, the variable bypass bellmouth system is supplemented at low airspeeds and during ground operations by which of the following units?

1. The bellmouth ring
2. The aft variable ramp
3. The auxiliary air doors
4. The front variable ramp

12-71. When the control valve is in the neutral position in a bomb bay system, the doors are held closed by what means?

1. A check valve
2. Mechanical locks
3. Hydraulic pressure
4. A hydraulic lock valve

12-72. When you are adjusting the blades to the parking area in a windshield wiper system, rotating a blade one serration will equal approximately how many degrees of rotation?

1. 10°
2. 2°
3. 3°
4. 5°